

Scanning report of Italian labs

ADELE LAURIA

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On behalf of

Bari, Bologna-Padova, LNF, Napoli, Roma, Salerno

OPERA Collaboration Meeting

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Napoli

Data extracted from OPFRA@19/10/16

Priority events: analysis status 0μ

RUN	Assigned	Loc & DS	DS to do	Dead Material	Passing	Started & Not Yet Flagged	Rank
2008	54	36	0	3	0	0	1
2008	19	7	0	2	0	0	2
2008	6	1	0	2	0	0	>2
2009	106	64	0	9	0	0	1
2009	37	14	0	7	0	0	2
2009	5	1	0	0	0	0	>2
2010	126	73	0	9	2	1	1
2010	32	16	1	1	2	1	2
2010	9	1	0	1	1	1	>2
2011	123	71	0	7	2	5	1
2011	10	2	0	0	1	1	2
2011	10	4	0	0	1	2	>2
2012	60	37	0	1	2	2	1
2012	16	6	0	0	1	2	2
2012	9	1	0	0	0	0	>2
TOT:	622	334	1	42	12	15	

•DS completed

•Less DM in 2011-2012 respect to 2008-2010 due to incomplete analysis of Passing through

•15 events to be flagged in the Database (-23 wrt Nagoya CM)

PRIORITY:

- priority flag>=0
- CS_CAND_OK_DEVELOP
- $P_{\mu} < 15 \text{ GeV}/c$

Priority events: analysis status 1μ

RUN	Assigned	Loc & DS	DS to do	Dead Material	Passing	Started & Not Yet Flagged	Rank
2008	219	168	0	12	1	1	1
2008	36	20	0	5	0	0	2
2008	9	2	0	3	0	1	>2
2009	364	279	0	24	0	0	1
2009	103	62	1	11	0	0	2
2009	18	8	0	4	0	2	>2
2010	367	266	0	18	4	6	1
2010	89	41	2	6	4	2	2
2010	12	1	0	1	1	5	>2
2011	409	269	5	20	11	9	1
2011	84	37	1	6	7	8	2
2011	19	5	0	1	2	2	>2
2012	267	156	5	11	16	14	1
2012	41	13	0	1	5	5	2
2012	14	2	0	1	1	5	>2
TOT:	2051	1329	14	125	52	60	

• DS completed at 98.9%

• Less DM in 2011-2012 respect to 2008-2010 due to incomplete analysis of Passing through

• 60 events to be flagged in the Database (-39 wrt Nagoya CM)

Priority events: completeness

0 μ								1 μ							
RUN	Started	Loc & DS	Given up	DM	PT	Not completed	Rank	RUN	Started	Loc & DS	Given up	DM	PT	Not completed	Rank
2010	100%	58%	31%	7%	2%	2%	1	2010	100%	72%	17%	5%	1%	5%	1
2010	100%	50%	28%	3%	6%	12%	2	2010	99%	46%	33%	7%	4%	9%	2
2010	100%	11%	56%	11%	11%	11%	>2	2010	100%	8%	25%	8%	8%	50%	>2
TOT	100%	54%	32%	7%	3%	5%		TOT	100%	66%	20%	5%	2%	7%	
2011	100%	58%	24%	6%	2%	11%	1	2011	100%	66%	18%	5%	3%	8%	1
2011	100%	20%	60%	0%	10%	10%	2	2011	100%	44%	24%	7%	8%	17%	2
2011	100%	40%	30%	0%	10%	20%	>2	2011	100%	26%	47%	5%	11%	11%	>2
TOT	100%	54%	27%	5%	3%	12%		TOT	100%	61%	20%	5%	4%	10%	
2012	98%	62%	28%	2%	3%	3%	1	2012	99%	58%	18%	4%	6%	12%	1
2012	100%	38%	38%	0%	6%	19%	2	2012	100%	32%	29%	2%	12%	24%	2
2012	100%	11%	89%	0%	0%	0%	>2	2012	100%	14%	36%	7%	7%	36%	>2
TOT	99%	52%	36%	1%	4%	6%		TOT	99%	53%	20%	4%	7%	15%	

- 100% started
- to be completed: 5% to 15%

Priority events: incremental efficiency

0μ			
RUN	1st brick	1st & 2nd brick	all
2008	0.46±0.06	0.54±0.06	0.56±0.06
2009	0.43±0.04	0.53±0.04	0.53±0.04
2010	0.45±0.04	0.55±0.04	0.55±0.04
2011	0.53±0.04	0.55±0.04	0.58±0.04
2012	0.46±0.06	0.54±0.06	0.55±0.06

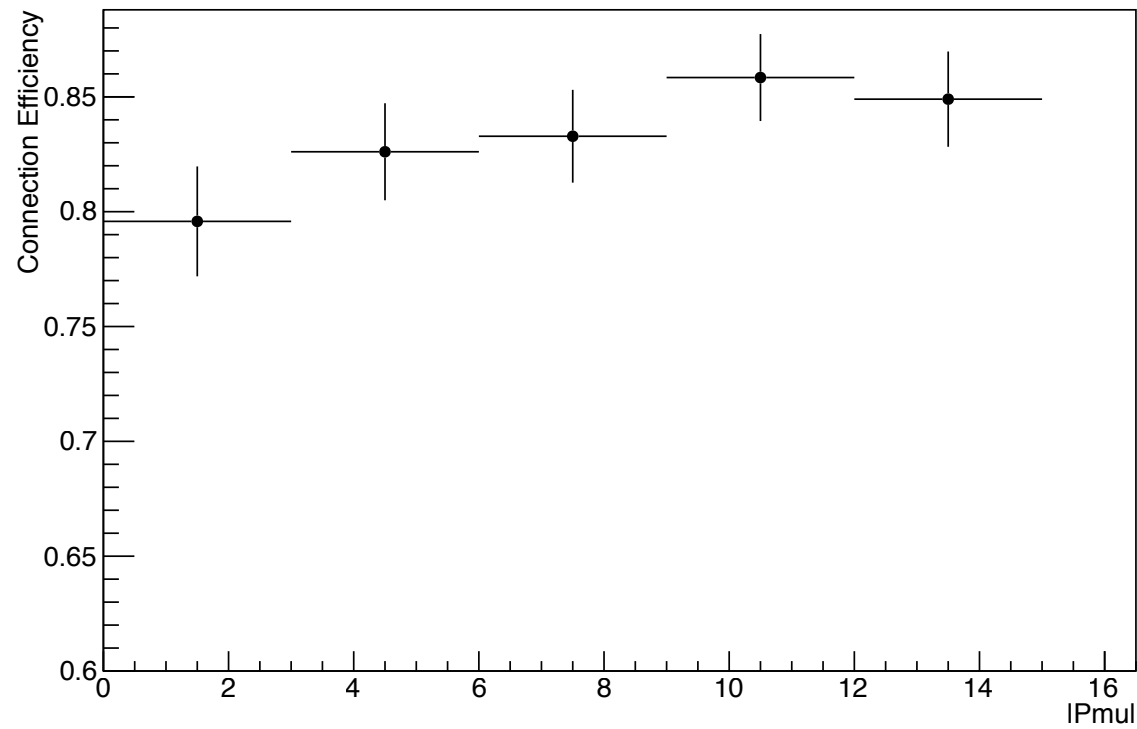
$$\epsilon = \frac{\text{Located in ECC}}{\text{Started}}$$

- 0μ : stable efficiency
- 1μ : decrease of location efficiency in 2011-2012 less evident wrt Nagoya CM

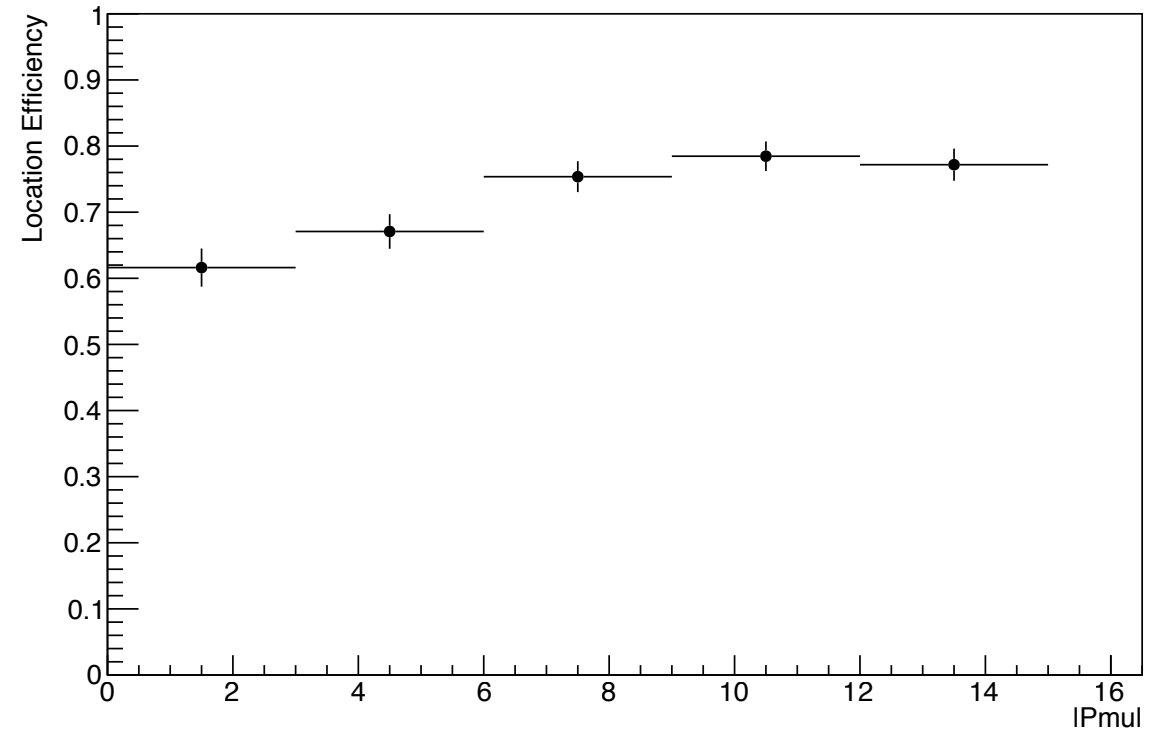
1μ			
RUN	1st brick	1st & 2nd brick	all
2008	0.65±0.03	0.72±0.03	0.73±0.03
2009	0.58±0.02	0.72±0.02	0.73±0.02
2010	0.59±0.02	0.69±0.02	0.70±0.02
2011	0.57±0.02	0.65±0.02	0.66±0.02
2012	0.58±0.03	0.63±0.03	0.64±0.03

Efficiency Vs P Muon (1μ)

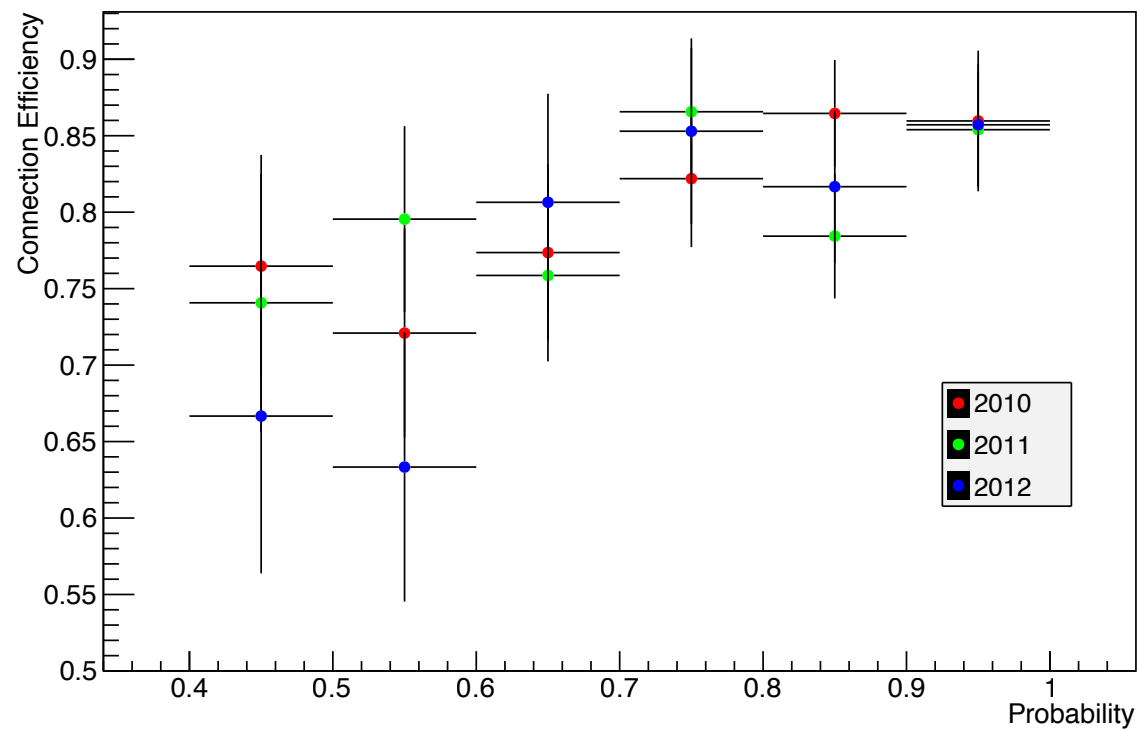
Connection Efficiency Vs PMu - ALL YEARS - (Priority brick, 1μ , rank 1)



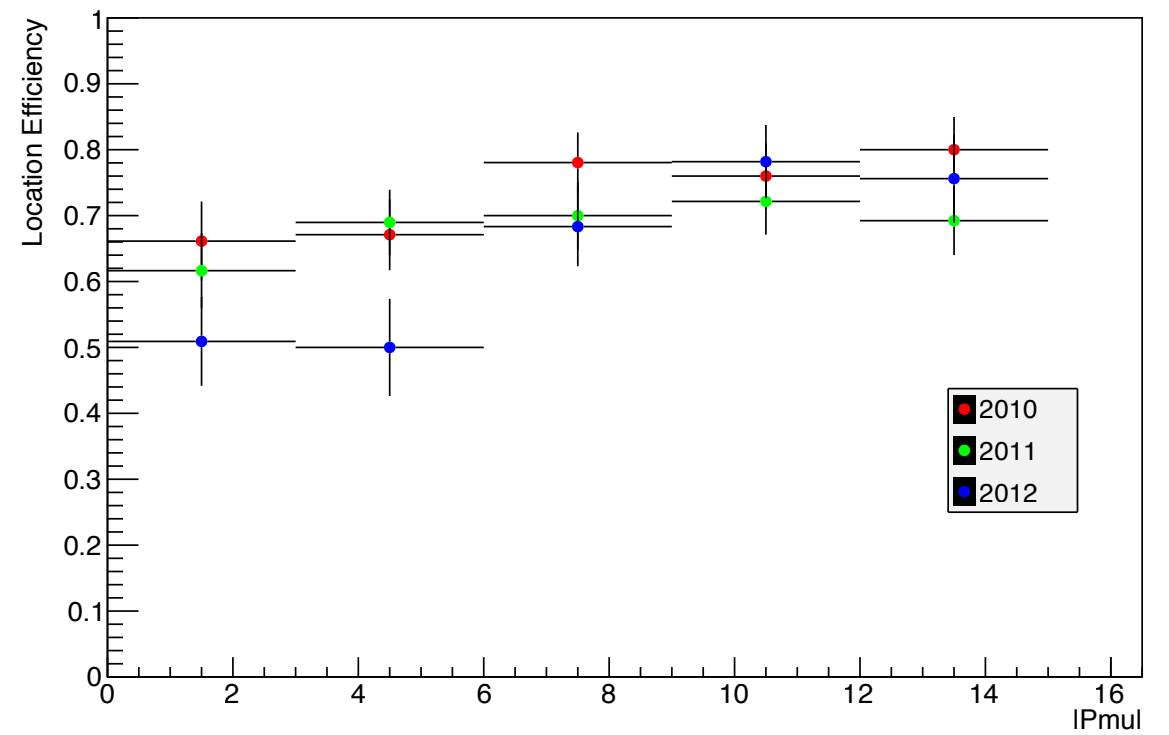
Location Efficiency Vs PMu - ALL YEARS -(Priority brick, 1μ , rank 1)



Connection Efficiency Vs Probability (Priority brick, 1μ , rank 1)



Location Efficiency Vs PMu (Priority brick, 1μ , rank 1)

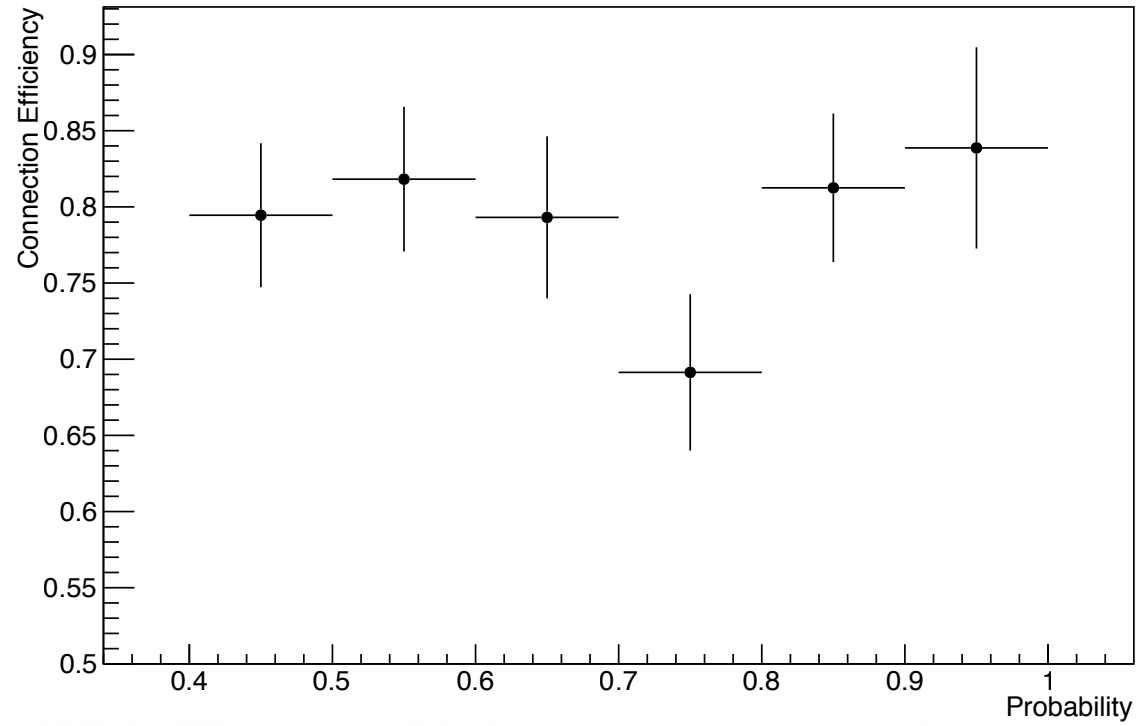


Efficiency Vs Probability - ALL YEARS rank #1

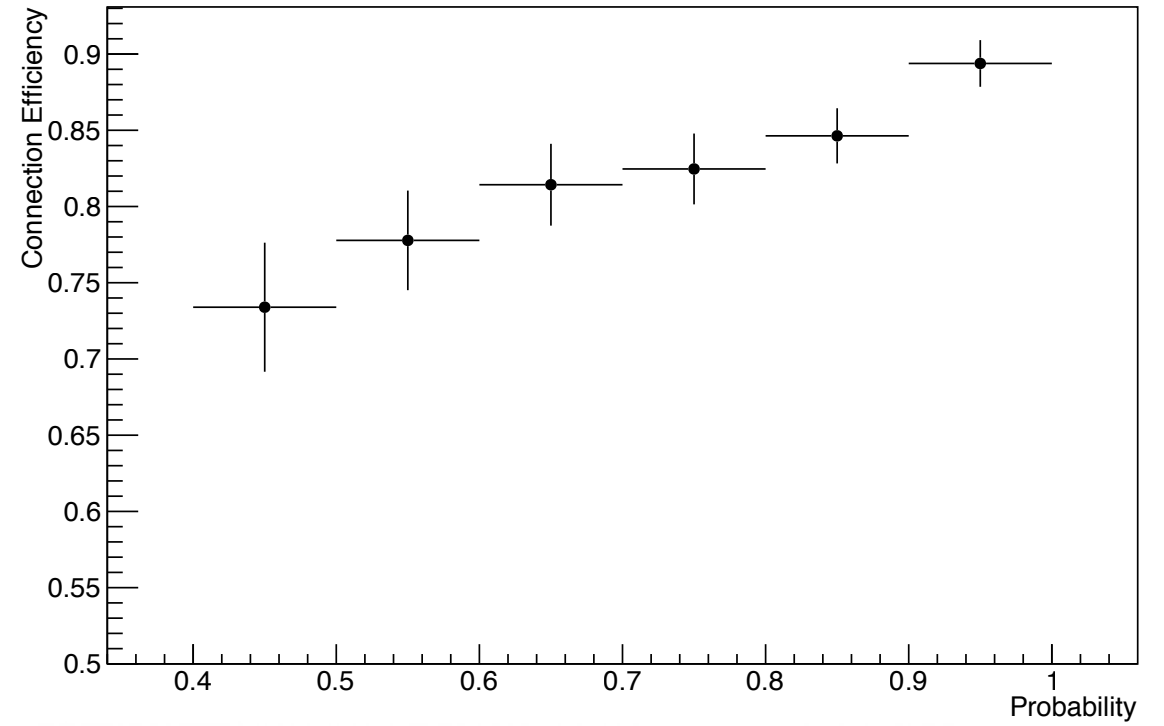
0 μ

1 μ

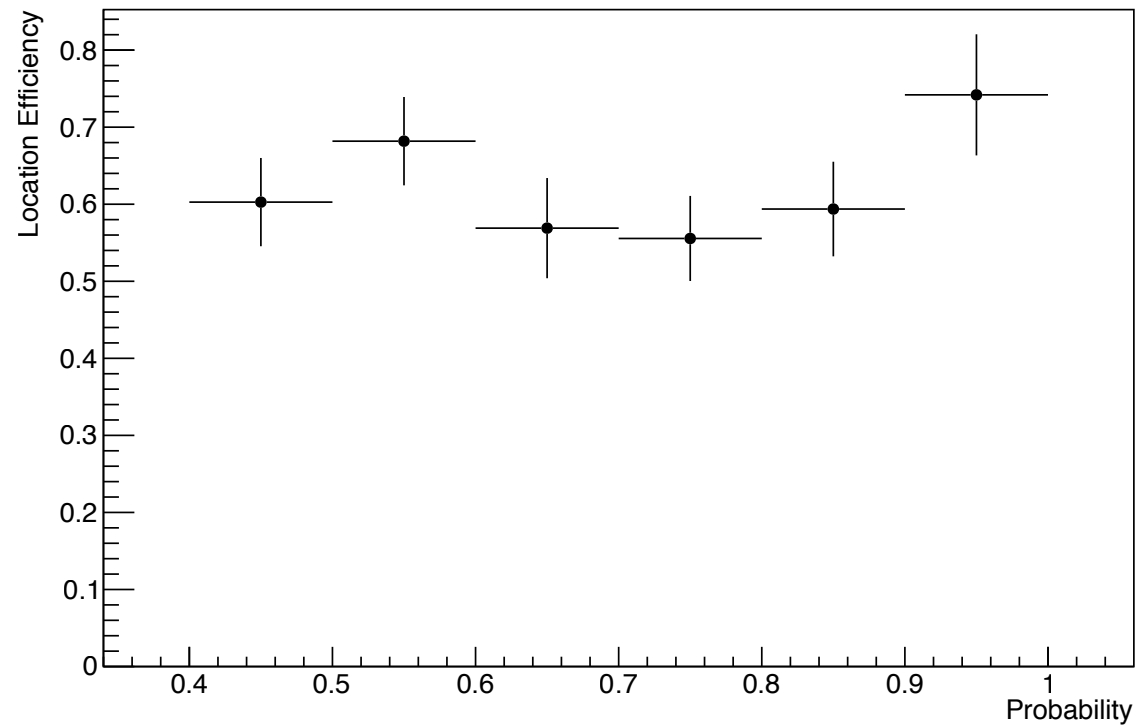
Connection Efficiency Vs Probability - ALL YEARS - (Priority brick, 0 μ , rank 1)



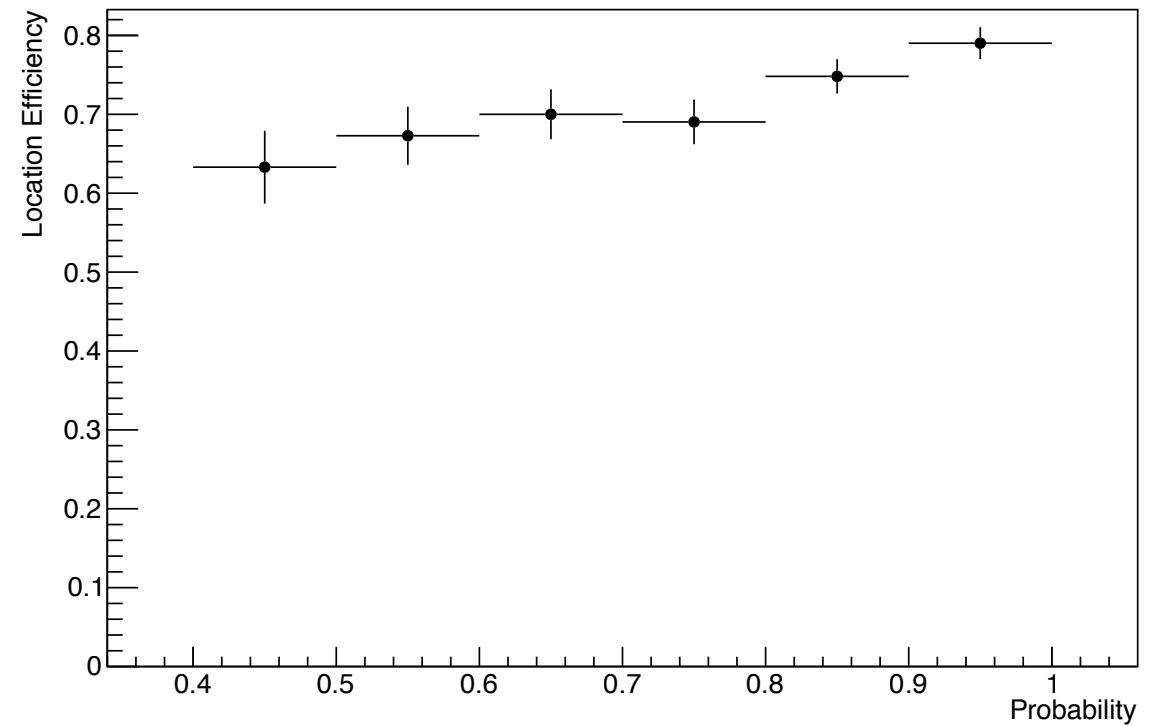
Connection Efficiency Vs Probability - ALL YEARS - (Priority brick, 1 μ , rank 1)



Location Efficiency Vs Probability - ALL YEARS - (Priority brick, 0 μ , rank 1)



Location Efficiency Vs Probability - ALL YEARS - (Priority brick, 1 μ , rank 1)



BLACK_CS_DEVELOP

0 μ								
Run	Assigned	Started	Loc & DS	DS to do	DM	Passing	Given up	Started & Not Yet Flagged
2008	3	3	0	0	0	0	1	2
2009	5	2	1	0	0	1	0	0
2010	9	8	2	0	0	0	4	2
2011	16	14	1	0	0	0	5	8
2012	17	9	3	0	0	0	6	0
TOT:	50	36	7	0	0	1	16	12

**72% Black CS 0μ :
STARTED**
(+16 wrt Nagoya CM)

67% Completed

**20% location
efficiency**

(+5% wrt Nagoya CM)

**79% Black CS
1μ: STARTED**
(+4 wrt Nagoya CM)

71% Completed

**35% location
efficiency**

(+2% wrt Nagoya CM)

1 μ								
Run	Assigned	Started	Loc & DS	DS to do	DM	Passing	Given up	Started & Not Yet Flagged
2008	19	17	10	0	0	0	1	6
2009	19	18	6	0	7	0	2	2
2010	20	15	6	0	0	0	6	3
2011	25	18	3	1	1	0	6	7
2012	14	9	2	0	0	0	4	3
TOT:	97	77	27	1	8	0	19	21

NO_COSMIC_RAYS_DEVELOP

0 μ								
Run	Assigned	Started	Loc & DS	DS to do	DM	Passing	Given up	Started & Not Yet Flagged
2008	7	6	0	0	0	0	3	3
2009	25	17	3	0	3	0	4	6
2010	37	30	3	1	0	3	11	10
2011	33	19	1	0	0	0	10	8
2012	16	10	1	0	0	0	5	3
TOT:	118	82	8	1	3	3	33	30

**69% NO CR 0 μ :
STARTED**
(+22 wrt Nagoya CM)

59% Completed

**10% location
efficiency**
(-2% wrt Nagoya CM)

**74% NO CR 1 μ :
STARTED**
(+10 wrt Nagoya CM)

1 μ								
Run	Assigned	Started	Loc & DS	DS to do	DM	Passing	Given up	Started & Not Yet Flagged
2008	17	13	4	0	0	0	1	8
2009	25	21	4	1	3	1	5	6
2010	13	8	2	0	0	0	2	3
2011	10	6	0	0	0	1	4	1
2012	3	2	0	0	0	0	2	0
TOT:	68	50	10	1	3	2	14	18

60% Completed

**20% location
efficiency**
(-2% wrt Nagoya CM)

Overall analysis status

CS OK + BLACK + NO COSMIC
no cut on P_{μ}

0 μ	
RUN	LOCATED ECC
2008	44
2009	86
2010	97
2011	80
2012	48
TOT:	355

+8 wrt Nagoya CM

1 μ	
RUN	LOCATED ECC
2008	337
2009	579
2010	451
2011	333
2012	193
TOT:	1893

+13 wrt Nagoya CM

Conclusions & Prospects

- ◆ **2248 events located in ECC (355 0 μ , 1893 1 μ) over 3643 assigned (797 0 μ , 2846 1 μ)**
- ◆ **2nd, 3rd and 4th bricks:**
 - ◆ **100% started**
 - ◆ **15 0 μ and 60 1 μ : to be completed**
- ◆ **Black CS: more than 70% of started have been completed, 33 events to be completed**
- ◆ **NO_CR: more than 60% of started have been completed, 48 events to be completed**
- ◆ **Naples lab now in charge of all European bricks**

All events: incremental efficiency

0μ		
RUN	1st+2nd+3rd Bricks, CS OK	All (including Black CS + NO CR)
2008	0.56±0.06	0.54±0.05
2009	0.53±0.04	0.53±0.04
2010	0.56±0.04	0.52±0.04
2011	0.58±0.04	0.53±0.04
2012	0.55±0.06	0.49±0.04

$$\epsilon = \frac{\textit{Located in ECC}}{\textit{Started \& Flagged}}$$

Efficiency slightly decreasing
when considering
also Black CS and NO CR

1μ		
RUN	1st+2nd+3rd Bricks, CS OK	All (including Black CS + NO CR)
2008	0.73±0.03	0.74±0.03
2009	0.74±0.02	0.71±0.02
2010	0.70±0.02	0.69±0.02
2011	0.66±0.02	0.65±0.02
2012	0.64±0.03	0.62±0.03